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ABSTRACT

The Developmental Indicators for the Assessment of Learning--Revised (DIAL-R) is a standardized developmental screening instrument designed to assess the motor, language (both receptive and expressive), and conceptual skill levels of children 2 to 6 years of age. The appropriateness of national norms for children in Kentucky was studied in a norming project involving 768 kindergarten students from Jessamine County for a period of over 2 years. Local means and standard deviations were determined for comparison with national norms. Means for the Kentucky sample were significantly higher than were those for corresponding national norms, except for the 4-year, 6-month to 4-year, 8-month age interval. Reasons for these differences are discussed. The Jessamine County group also demonstrated more developmental score variability than was obtained with the national data, possibly a reflection of the heterogeneity of the entering kindergarten population. These results underscore the importance of using local norms for standardized tests; they affirm the need for comparing kindergarten pupils to their local classmates in order to obtain a better picture of developmental progress and school readiness. (SLD)

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Development of local DIAL-R norms:

A preliminary analysis

Ray Witte and Mark Fazey

Many school districts across the country utilize standardized screening tests or batteries to measure a child's general development and potential school readiness upon entering kindergarten. Results obtained from formalized screenings can help provide a developmental reference point for teachers, as well as offer potential guidance in structuring classroom curriculum and individual instruction. An additional purpose, indeed often a primary purpose for some school districts, is to help identify children who may be at risk for school difficulty or failure. Weak screening performances may suggest the need for further assessment and potentially the need for additional services that are not typically provided in the regular kindergarten classroom.

The Developmental Indicators for the Assessment of Learning-Revised (DIAL-R) is a standardized developmental screening instrument designed to assess the motor, language (both receptive and expressive language) and conceptual skill levels in children two to six years of age (Mardell-Czudnowski & Goldenberg 1983). Presently, a large number of school districts in Kentucky utilize the DIAL-R as the primary screening instrument for entering kindergarteners. Although widely accepted, the

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appropriateness of the national norms to school populations in Kentucky has yet to be fully explored.

Previous research (Rush 1986) has indicated local-national DIAL-R norm differences. Furthermore, the authors of the DIAL-R have strongly supported developing local norms (Goldenberg 1988). Given concerns that the national norms may not be truly representative of children in the central Kentucky area, the Jessamine County School System (JCSS) launched a two year research project to develop local DIAL-R norms.

Located 15 miles south of Lexington, Kentucky, the JCSS serves approximately 5,500 students (K-12) and has used the DIAL-R as its primary kindergarten screening instrument since 1988. It is administered to all entering kindergarten pupils during the summer prior to school entry or during the first three weeks of school.

Local Norming

During the two year norming project, data on 768 kindergarten pupils was collected. Local means, standard deviations, and sample sizes for the DIAL-R Total Score across all age intervals from 4 years, 6 months to 5 years, 11 months are displayed in Table 1. Corresponding national DIAL-R norms are included. F-test results for equal variances and t-test findings are also listed.

Table 1-Jessamine County 1988-90 DIAL-R Total Scores vs. National Norms

Age Level	Sample Size		Mean		Std. Dev.		F Test		Smith-Satterthwaite t Test (Unequal variances)		
	JC	Nat	JC	Nat	JC	Nat	F ₀	F _{.05}	d.f.	t ₀	t _{.05}
4-6 to 4-8	21	202	58.8	59.2	12.5	10.6	1.39	1.62	23	0.14	1.71
4-9 to 4-11	147	187	69.7	62.3	10.9	10.0	1.18	1.29	301	6.39	1.65
5-0 to 5-2	181	214	71.7	65.2	12.5	10.0	1.57	1.26	342	5.65	1.65
5-3 to 5-5	186	122	74.4	68.4	11.0	7.6	2.11	1.32	305	5.62	1.65
5-6 to 5-8	179	150	76.7	71.0	9.4	7.7	1.49	1.30	327	6.08	1.65
5-9 to 5-11	54	135	77.9	72.1	10.1	8.8	1.32	1.44	87	3.72	1.66
*****	*****	*****	*****	*****	*****	*****	****	*****	*****	*****	*****
4-6 to 5-11	768	1010	73.2	65.6	11.6	10.4	1.23	1.13	1558	14.30	1.65

In testing for equal variances, F-test results implied unequal variances between JCSS and national norms. Therefore, the Smith-Satterthwaite procedure was used to adjust the degrees of freedom in testing the equality of DIAL-R Total Score means for each age level between the two groups. The results of these modified t-tests at the .05 significance level indicated the JCSS DIAL-R Total Score means were significantly higher than corresponding national norms, except for the 4-6 to 4-8 age interval.

Reasons for Norm Differences

Several contributing factors may exist for the higher means and standard deviations: developmentally advanced children, ethnic homogeneity, testing and scoring error, data entry error and practice effect. One or all of the aforementioned component could have contributed to the present findings.

In regards to the higher means, the JCSS may possess more developmentally advanced children. A recent population growth surge may support this possibility. Between 1970 and 1980 the

population in the region grew by 50 percent and this rate is expected to continue through 1995 (Peel 1988). A previously rural, agriculture-based community has quickly evolved into a suburban bedroom community for Lexington. Consequently, an influx of new middle to upper middle class families may have brought more developmentally advanced and school ready children to the area.

Jessamine County possesses a relatively small minority population, approximately 5 percent. Given the fact that the national norms reflect a much higher minority representation, perhaps the higher means are due to a more developmentally accelerated white population. The JCSS DIAL-R Total Score means were compared to an all-white population that was derived from the original national stratified sample. This comparison revealed the JCSS Total Score means were greater than the national all-white sample Total Score means for each age level except the 4-6 to 4-8 age interval. In addition, the Total Score standard deviations of the JCSS sample were also larger than the corresponding age level Total Score standard deviations for all compared levels. This pattern of differences is identical to those noted between JCSS Total Score statistics and the complete national sample Total Score statistics. The statistical significance of the differences between JCSS and national all-white means and standard deviations was not assessed however,

since the number of subjects at each national all-white age level was unavailable at the time of this analysis.

Whenever formal assessment procedures are followed, the possibility of testing and scoring error exists, which may produce inaccurate norm estimates. Over the two year span that the DIAL-R has been given in Jessamine County, several individuals have served as testors during the screenings. Typically, both the motor and concepts section has been administered by certified employees (i.e. teacher, school psychologist). The language section has always been given by a speech and language pathologist.

All school personnel are required to go through a special training session prior to the actual screening. Considerable time and effort is expended to ensure testors are fully trained. During the actual screenings, protocol scoring is checked at least twice in order to assure the accuracy of the test results. In addition, the DIAL-R provides clear, objective scoring criteria which minimizes subjective scoring and evaluation.

The raw DIAL-R data from Jessamine County was collected and analyzed by the district's school psychologist and a statistics professor at the University of Kentucky. Raw score data entry was carefully monitored and checked for accuracy. Commerical spreadsheet software was used for all statistical analyses. Mass screenings by their nature provide the potential for overhearing answers and modeling or practicing behaviors of

children involved in current testing. This experience could certainly inflate the general performance for some children. Parental discussion and practice of the test items prior to test administration might also increase a child's performance, and subsequently their estimated developmental level and progress.

In addition to obtaining higher means, the Jessamine County data demonstrated more developmental score variability than was obtained with the national norm data. In fact, significant differences between the national and JCSS Total Score variation across all age groups were demonstrated.

The greater test score variability may be due to the increased heterogeneity of the entering school population. A more demographically diverse kindergarten population now exists in Jessamine County; these children are entering school with considerable variation in their general maturation, development, and academic readiness. The more children differ regarding their entering skills, the more test scores will vary.

Formal testing inconsistency may contribute to higher score variation. Several different operators have been used in the screenings. However, all testing personnel follow the same test administration and scoring procedures which are designed to maintain internal test reliability. If training procedures for the DIAL-R were not provided, this factor might deserve more consideration.

Finally, data recording or statistical analysis errors could result in higher test variance. On the other hand, the possibility for these types of errors is extremely small. All DIAL-R protocols were examined and checked for errors by three independent examiners. Protocols that had missing data or that were not completed correctly were eliminated from the data set while statistical computations were double checked for accuracy.

Conclusion

The results of the present study highlight the importance of possessing local norms for the interpretation of the DIAL-R. The kindergarten pupils in the JCSS showed greater developmental progress and variability. These results affirm the need and importance of comparing a kindergarten pupil to his or her local classmates in order to get a better picture of developmental progress and school readiness. Having accurate norms are essential for school districts which use early screening results for instructional purposes or in the identification of children in need of further assessment.

References

Goldenberg, D. (1988). Personal Communication.

Mardell-Czudnowski C. D., & Goldenberg, D. (1983). Developmental indicators for the assessment of learning-revised.
NJ: Childcraft.

Peel, E. (School Board Chairman). (1988, October). A guide to strategic planning for the Jessamine County schools.

(Available from [Lois Adams, 500 East Maple St., Nicholasville, Kentucky])

Rush, T. (1986). Comparing local and national norms on the DIAL-R, a standardized developmental test. ERS Spectrum, 4, 8-11.